4-2007

ARD News April 2007

University of Nebraska Lincoln

INSTITUTE OF AGRICULTURE AND NATURAL RESOURCES

Agricultural Research Division News

April 2007 Volume 40, Number 2

Comments from the Dean

Yesterday I had the good fortune to meet with Dr. Charles Francis' classes in Agroecology, a pleasure that I believe several of you may of had in the recent past. I came away from the experience with a renewed understanding of the value of a research university to society and the importance of the professor as both a creative scholar and a teacher.

Since my visit to the classes was on their last meeting day of the semester and as usual, I was short on both time and previous preparation, I decided not to give a formal lecture with power points and take home bullet points. Instead I opted for an informal discussion around two questions that I think have some relevance to our short- and longer-term future and to the topic of their class.

1. In the short term: What knowledge do we need now to provide the highest probability possible for the success of a corn-based ethanol industry in Nebraska?
2. In the longer term: Can the food, fiber, materials and fuel needs of a world population approaching nine billion in the foreseeable future be met by biobased renewable sources?

The class members seemed to be a typical cross section of CASNR students. They were about equally divided between males and females. They were mostly juniors and seniors, with a few early graduate students. Their majors included: Agronomy, Horticulture, Landscape Design, Environmental Studies, Professional Golf Management, Nutrition, Fisheries and Wildlife and others that I don't recall. The point here is that they have been involved with a wide range of courses and professors across CASNR and the rest of the University as well as with those of you who taught them in Dr. Francis' class.

The bottom line to this short story is that I was extremely impressed with their thoughtful, intelligent and insightful comments, analyses and recommendations for knowledge needs in these areas. The students had a keen understanding of the complexity of the issues and were able to comment perceptively on the environmental, economic, social and political issues relevant to developing a more biobased economy for the state, the nation, and the world. We can all be very proud of these students, and you can be proud of the part you have played in their education. Your ability to create new knowledge and pass it on to your students and the public at large is building a brighter future for all of us. Thanks to you, IANR is at work for Nebraska.

Gary Cunningham, Dean and Director

Layman Awards

IANR faculty submitted 13 proposals for funding by the Layman Trust. A subcommittee of the ARD Advisory Council carefully evaluated each proposal and ranked the submissions in relation to quality of science and the potential impact of the proposed research. There were 13 proposals forwarded to the Vice Chancellor for Research.

The primary aim of the Layman Awards is to provide seed money to enhance the possibility of obtaining external support for the research project. Only untenured faculty or tenured faculty who have not yet received an external grant are eligible for the program.

Eight of the 13 proposals submitted to the Vice Chancellor for Research were funded:

Amalia Yiannaka, Agricultural Economics Department
"Using Economic Experiments to Understand Patenting Behavior"
Total Amount Received: $9,984
Funding Period: May 1, 2007 - April 30, 2008

Carlos Urrea, Agronomy and Horticulture Department
"Identification of Sources of Bacterial Wilt Resistance in Common Beans (Phaseolus vulgaris L.)"
Total Amount Received: $5,792
Funding Period: May 1, 2007 - April 30, 2008

Jennifer Wood, Animal Science Department
"Insulin Signaling and the Regulation Oocyte Quality"
Total Amount Received: $10,000
Funding Period: May 1, 2007 - April 30, 2008

Joseph Barycki, Biochemistry Department
"Characterization of Disrupted Multi-subunit Enzyme Interactions that Impair Cardiac Valve Development and Function"
Total Amount Received: $10,000
Funding Period: May 1, 2007 - April 30, 2008

Melanie Simpson, Biochemistry Department
"Hyaluronidase Activation and Function in Cancer"
Total Amount Received: $10,000
Funding Period: May 1, 2007 - April 30, 2008

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IANR

Vicki Schlegel, Food Science and Technology Department
"Development of Fourier Transform Mid-infrared Spectroscopy as a Metabolomic Method for Characterizing Natural Antioxidants"
Total Amount Received: $10,000
Funding Period: May 1, 2007 - April 30, 2008

Jens Walter, Food Science and Technology Department
"The Genetic Basis of Host-bacterial Symbiosis in the Gut: Identification of Colonization Factors of (Lactobacillus reuteri) Strains Inhabiting the Gastrointestinal Tract by Comparative Genomics"
Total Amount Received: $10,000
Funding Period: May 1, 2007 - April 30, 2008

Xiaomao Lin, School of Natural Resources
"Evaluating Magnitude Uncertainties of Climate Change: A Study on the Contiguous United States Surface Temperatures"
Total Amount Received: $10,000
Funding Period: May 1, 2007 - April 30, 2008

Anna Elliott Proposals

Thirteen proposals were received for the Anna H. Elliott fund. This fund was established in the University of Nebraska Foundation with the stipulation that earnings be used for research in some area of agriculture, particularly in the field of plant sciences, and with preference to plant science in Western Nebraska. Seven proposals were funded as follows:

Walt Schacht, Agronomy and Horticulture Department
(Jeff Volesky and A. Stalker, West Central Research and Extension Center; and Terry Klopfenstein, Animal Science)
"Distillers Grains Supplementation Effects on Sandhills Plant Community Utilization and Composition"
Total Amount Received: $8,180
Funding Period: May 1, 2007 - April 30, 2008

Robert Wilson, Panhandle Research and Extension Center
"Developing a Long-term Strategy for Management of Invasive Trees for the North Platte River"
Total Amount Received: $6,650
Funding Period: May 1, 2007 - April 30, 2008

Carlos Urrea, Panhandle Research and Extension Center
(Dean Yonts and John Smith, Panhandle Research and Extension Center)
"Improving Dry Bean Production Systems Under Limited Irrigation by Integrating Variety Drought Tolerance, Plant Phenology and Soil Water Based Irrigation Scheduling, and Alleviation of Soil Compaction"
Total Amount Received: $11,700
Funding Period: May 1, 2007 - April 30, 2008

Dean Yonts, Panhandle Research and Extension Center
(John Smith and Robert Wilson, Panhandle Research and Extension Center)
"How Much Soil Water Can Be Conserved Using a No-till System With a Crop Rotation of Sugarbeets, Dry Beans, and Corn?"
Total Amount Received: $14,000
Funding Period: May 1, 2007 - April 30, 2008

Robert Harveson, Panhandle Research and Extension Center
(Anne Vidaver, Plant Pathology Department)
"Is It a Single Bacterium or Multiple Bacteria Producing Bacterial Wilt in Dry Beans, Soybeans, Wheat and Corn in Western Nebraska?"
Total Amount Received: $12,300
Funding Period: May 1, 2007 - April 30, 2008

Tamra Jackson, Plant Pathology Department
(Robert Harveson, Panhandle Research and Extension Center, Anne Vidaver, Plant Pathology Department)
"Investigation into the Reemergence of Goss's Wilt of Corn in Western Nebraska"
Total Amount Received: $15,000
Funding Period: May 1, 2007 - April 30, 2008

Simon van Donk, West Central Research and Extension Center
(Derrell Martin and Suat Irmak, Biological Systems Engineering)
"Evapotranspiration of Sprinkler-irrigated Corn Under Various Tillage and Residue Conditions"
Total Amount Received: $15,000
Funding Period: May 1, 2007 - April 30, 2008

Helpful Hints – USDA Grant Proposals

All USDA grant proposals will be processed and submitted by Agricultural Research Division or Cooperative Extension Division. The ARD and CED staff are ready to assist scientists with reviewing budgets and processing required forms. We have also prepared a sample grants.gov application package which, upon request, can be e-mailed to you. This sample package is helpful for information required on forms – SF 424 (R&R), Supplemental Information form, etc.

How much time do we need to submit the proposal? Allow at least two days before deadline to have the proposal checked for problems and then submitted. The proposal can be sent at anytime during preparation to be checked for accuracy. Send your application file as an e-mail attachment to Nelvie Lienemann for research proposals and Lynne Smejdir for extension proposals.

To get started - Find the program to which you would like to apply.

Do Not try to register at Grants.gov. The University of Nebraska is already registered as an applicant organization.

Download the "PureEdge" software program. It is at the same site as the application package.

When you download the application package, save it to your computer and give it a file name. You can work on it just like any other document. Just be sure to SAVE each time before you exit the program.

Some other pointers for the application package that we have discovered:

Don't add your Social Security number to the R&R Personal Data form. (Our University is getting away from this,

and USDA does not require it).

R&R Budget form - you must enter an attachment (budget justification) before it will let you go to another period (budget year).

All attachments have to be in "pdf" format. Attachments/ narratives should have a 1" margin and at least 12 point font.

Collaborating with other universities (sub-budgets) requires completion of the R&R Subaward Budget Attachment(s) form, found in the CSREES Grant.gov application package. For questions regarding this process, please contact Nelvie or Lynne.

ARD "Service Objectives"

In the February 1992 issue of ARD News, we first published the ARD "Service Objectives." The ARD staff have attempted to adhere to the objectives since that time. We have recently revised the "Service Objectives" and are providing them to ARD-affiliated faculty and staff to reaffirm our intent to provide the best possible service to individual faculty and IANR units.

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All Agricultural Research Division (ARD) administrators and office **personnel** believe that their role is to provide support and service to the research programs of units and faculty members. We will continually strive to enhance the effectiveness of all research projects to the greatest extent possible. One means of assisting the research efforts of faculty members, graduate students and support staff is to provide the highest level of administrative services possible. We are committed to excellence in administration and, hereby, establish the following "Service Objectives."

Office Personnel Commitments

- The following forms will be processed, signed and forwarded to the appropriate office/unit either the same day or the morning of the following day (in some cases additional processing may occur in Agriculture Hall before forms are returned to the unit or sent to City Campus):
  - Position descriptions
  - Personnel requisitions and related documents
  - Proposals to interview
  - Personnel Actions Forms (PAFs)
  - Reimbursement vouchers
  - Research Council proposals/requests
  - IANR Professional Development requests
  - Permission to engage in outside professional activity
  - Travel Authorizations
  - NU Grants - Approval request
  - Graduate faculty nominations
  - Other routine documents
- Telephone calls will be handled in a courteous and helpful manner. Telephone messages will be relayed as soon as the person returns or can be contacted.
- E-mail correspondence will be answered in a timely manner, normally the day of receipt.
- Efforts will be made to initiate scheduling project reviews within three working days after the research project outline arrives in ARD. The time that the review is conducted depends upon the availability of review committee members and department heads.
- ARD works with the grants.gov electronic proposal submission process and is committed to assist PI's with processing as necessary.
- All grant proposals, whether federal or private, will be processed and forwarded to either Sponsored Programs or USDA agencies as appropriate within eight working hours after receipt in ARD.
- Processing of revised project outlines and AD 416/417 CRIS Forms will be initiated within three working days after arrival in ARD.
- Processing of cooperative agreements and contracts will be initiated within three working days after arrival in ARD.

Administrator Commitments

- Except in the most extreme circumstances, someone with ARD signature authority will be available every working day. Under no circumstance will there be more than one consecutive working day without this capability.
- RFPs will be sent to units within two working days after ARD receipt.
- Recurring RFPs will be anticipated and preliminary notice sent to units at least thirty days prior to the proposal deadline.
- Rationale for funding decisions will be communicated to unit administrators.
- All priority incoming mail will be processed as soon as possible and acknowledgments/responses will be sent within five working days.
- All telephone calls and e-mail to a specific individual will be returned within twenty-four hours after the person returns to the ARD office. Callers or senders will be notified of the time of return and be offered redirection of the call.
- Decisions or priority rankings on proposals for "local" grant programs (i.e., Layman Fund, UN Foundation, ARD Interdisciplinary Research, Elliott Fund, Sampson Fund, etc.) will be made within two weeks after deadline for receipt of proposals. Feedback will be provided to all funded and non-funded authors.
- Decisions on recipients for ARD awards will be made within two weeks after deadline for nominations.
- Decisions regarding allocation of "new" resources (i.e., equipment funds, operating, hourly, and GRA stipends) will be made within two weeks after deadline for receipt of proposals from units. Decisions requiring joint decisions by divisions/college may require a longer period of time.
- Administrators will maintain an "open door" policy. We will be pleased to meet with any faculty or staff member or unit administrator at any time our schedule permits.
- Administrators will provide appropriate accountability on all funds.
- The ARD will strive to provide high-quality outreach ma terials suitable for a variety of audiences and clientele. Materi als will emphasize impact and outcomes.
- Administrators will develop and communicate reasonable,

attainable research productivity goals for units and faculty.

- Administrators will value, promote and support interdisciplinary research teams.
- Administrators will support faculty participation in regional research projects.
- Administrators will provide appropriate programs to support the graduate and undergraduate education of students interested in research careers.

Revised: November 2005
Revised: February 2007

New or Revised Projects January and February 2007

NEB 22-320 NC-1032, Characterizing active soil organic matter pools controlling soil availability in maize-based cropping systems
Investigator: Dan Walters, Agronomy and Horticulture
Status: Multistate project effective Oct. 1, 2006, through Sept. 30, 2011

NEB 24-158 NC-1034, Impact analyses and decision strategies for agricultural research
Investigator: Richard Perrin, Agricultural Economics
Status: Multistate project effective Oct. 1, 2006, through Sept. 30, 2011

NEB 36-065 Identification and characterization of bioactive compounds with cholesterol-lowering and anti-inflammatory properties from a blue-green alga
Investigator: Ji-Young Lee, Nutrition and Health Sciences
Status: Hatch project effective Jan. 1, 2007, through Dec. 31, 2011

NEB 37-034 American Quilts, 1170-1940
Investigator: Patricia Crews, Textiles, Clothing and Design
Status: Hatch project effective Nov. 1, 2006, through Oct. 31, 2011

NEB 41-033 Irrigation management for improved water and chemical utilization
Investigator: William Kranz, Northeast Research and Extension Center
Status: Hatch project effective July 1, 2006, through June 30, 2011

NEB 41-034 Ecology and management of insect pests of crops in the western range of U.S. corn and soybean production
Investigator: Tom Hunt, Northeast Research and Extension Center
Status: Hatch project effective Dec. 1, 2006, through Nov. 30, 2011

Proposals Submitted for Federal Grants January and February 2007

The following is a listing of proposals that were submitted during January and February 2007 by faculty for federal grant programs. While not all grants will be funded, we are appreciative of the faculty members' outstanding efforts in submitting proposals to the various agencies.

Andrea Cupp, John Weber, and Brett White – NIH – Role of VEGF in testies morphogenesis – $1,187,261

Richard Ferguson, Suat Irmak, Mark Bernards, Tamra Jackson, Robert Wright, and Matthew Stockton – USDA-NRI – Cropping system dynamics for deficit irrigation environments: Protecting and conserving ground and surface water resources – $499,514

Robert Wright, Gary Hein, Thomas Hunt, and Tamra Jackson – USDA-NRI – Improved monitoring techniques and EILs for western bean cutworm on field corn – $97,499

Carlos Urrea, Gary Hergert, Drew Lyon, Alexander Pavlista, Catherine Johnston, and C. Dean Yonts – USDA-NRI – Mechanisms of drought tolerance in dry beans (Phaseolus vulgaris L.) and the introgression of exotic drought tolerance from exotic germplasm – $696,133

Andrea Cupp – USDA-NRI – Investigation of factors regulating bovine spermatogenesis – $112,500

Craig Allen and Gary Lynne – USDA-NRI – Understanding resilience in working agricultural landscapes – $398,657

David Shelton, Ellen Paparozzi, and Erin Blankenship – USDA-NRI – Enhancing tribal economic, cultural, and environmental benefits with conservation plantings – $54,535

Subash Das – USDA-NRI – Studies on the role of PRRSV surface glycoproteins in immunity using vesicular stomatitis virus – $237,500

Asit Pattnaik and Fernando Osorio – USDA-NRI – Role in virulence of non-structural and structural genes of porcine reproductive and respiratory syndrome virus – $374,314

Charles Francis – USDA-NRI – Learning and practicing organic farming: A model education program – $500,000

Raul Barletta – USDA-NRI – Mycobacterium avium sugsp. paratuberculosis pathogenesis – $161,561

Stephen Baenziger – USDA-NRI – Developing small grains cultivars and systems optimally suited for organic production – $830,700

Ji-Young Lee – American Heart Association – Mechanistic investigation of coupling of cholesterol and inflammatory signaling in chronic inflammation – $184,382

Melanie Simpson – American Heart Association – Characterization of disrupted multi-subunit enzyme interactions that impair cardiac valve development and function – $143,000

Brian Wardlow – NSF – Collaborative research: Agricultural intensification and forest conversion in the Brazilian Amazon – $22,966

Alan Baquet – USDA-RUPRI – Rural Research Policy Institute – $92,460

Yiqi Yang – NIH – Assessing the potential health risks of nanoscale materials in textiles – $214,518

Ji-Young Lee – USDA-NRI – Evaluation of the bioactivity of green tea in an animal model of oxidative stress – $36,522

Harshavardhan Thippareddi – USDA-NRI – Development and implementation of voluntary HACCP for the feed industry – $119,896

Julie Stone and Mark Wilson – NSF – Functional and biochemical analysis of plant and algal DJ-1-like proteins – $482,717

Shripat Kamble and Christopher DeHeer – USDA-NRI – Characterization of territory size and recoloization following colony death in a subterranean termite from the Midwestern U.S. – $343,949

Julie Albrecht – USDA-NRI – Does misting increase the microbial load on retail produce? – $556,385

Stephen Ragsdale – NSF – Enzymology and regulation of the anaerobic dehalogenation of chlorinated aromatics – $1,048,174

Susan Cuppett – USDA-NRI – Assessing flaxseed quality using color sorting, chemical and microbial profiles and sensory characteristics – $15,000

Timothy Carr – USDA-NRI – Regulation of cholesterol absorption by plant sterol and stanol esters – $476,916

Suat Irmak, Erkan Istanbulluoglu, and David Admiraal – NSF – Collaborative research: On topographic imprint of vegetation: Deciphering the influence of climate-soil-vegetation dynamics on landforms in Central New Mexico – $230,626

John Yohe and INTSORMIL – US AID – International sorghum, millet and other grains collaborative research support program – $900,000

Milford Hanna and Yixiang Xu – USDA-NRI – A novel two-phase coaxial jet electrospray technique for encapsulation of bioactive food ingredients – $178,350

Vicki Schlegel – NCR-SARE – Effects of sorghum grain lipids on metabolic pools of mammalian cell systems with an emphasis on anti-inflammatory properties – $10,000

Robert Hutkins and Rodney Moxley – USDA-NRI – Anti-adherence activity of prebiotic galactooligosaccharides against enteric pathogens – $343,479

Curtis Weller, Timothy Carr, Susan Cuppett, David Jackson, Ji-Young Lee, Vicki Schlegel, Lijun Wang, and Jens Walter – USDA-NRI – An integrated, holistic approach embracing recovery, characterization and technology transfer for nutraceutical development for cereal, pulse and alga – $750,000

Paul Hanson – NSF – Collaborative research: Influence of loess sedimentation and redistribution on soil cantena evolution in the Upper Midwest – $25,965

Lijun Wang, Curtis Weller, and Milford Hanna – USDA-NRI – Co-production of high-value chemicals and liquid fuels from distillers grains using sequential supercritical fluid extraction and liquefaction – $248,350

Yiqi Yang and Narendra Reddy – USDA-NRI – Natural cellulose fibers from switchgrass for composites and textiles and the byproducts of fiber production for biofuels – $309,864

Jae Ryu, Ya Ding, and Cody Knutson – USDA-NRI – Sustainable water management in agriculture-dominated watersheds: A stakeholder-driven approach integrating hydrology, economics and policy – $388,536

David Jackson, Randy Wehling, and R. M. Ratnayake – USDA-NRI – Improving partially cooked starch-based food products: Determining degree of cook and stickiness parameters linked to product/process functionality – $293,322

Kevin Pope, Craig Allen, and John Holz – USDA-NRI – Evaluation of a conservation reserve enhancement program (CREP) – $397,542

Jeyamkondan Subbiah, Chris Calkins, and Ashok Samal – USDA-NRI – Hyperspectral imaging to predict beef tenderness – $499,438

Ayse Irmak – NSF – The Clear Creek Watershed observatory - a cyperinfrastructure (CI) based testbed for community modeling and analysis of intensive agricultural systems – $198,021

Qi (Steve) Hu and Robert Ogelsby – Department of Energy – Predicting how weather patterns will evolve as climate changes: The role of planetary waves in CCSM3 – $538,340

David Wedin, Madhavan Soundararajan, Tracy Frank, Daniel Walters, and Donald Becker – NSF – MRI: Acquisition of a stable gas isotope ratio mass spectrometer – $566,013

John Lindquist – USDA-NRI – Assessment of gene flow risk from transgenic sorghum to shattercane – $32,360

Jaekwon Lee – NIH – Mechanistic insights into cellular cadmium detoxification – $1,770,207

Bradley Plantz, Kenneth Nickerson, Audrey Atkin, Susan Cuppett, Vicki Schlegel, David Dunigan, James Van Etten, Steven Harris, Patrick Dussault, and Ronald Cerny – NSF – MRI: Acquisition of metabolomic fingerprinting and targeted metabolite instrument cluster – $1,084,393

Harshavardhan Thippareddi, Jeyamkondan Subbiah, and Michael Zeece – USDA-NRI – Exploiting synergism of nonthermal technologies to improve food quality and safety – $749,966

Anatoly Gitelson – BARD – Quantitative monitoring of potentially nuisance algae in reservoirs and fishponds – $149,500

Steven Harris, Audrey Atkin, Patrick Dussault, Kenneth Nickerson, Stephen Kachman, and Dong Wang – NIH – Candida albicans responses to farnesol – $564,506

James Specht – USDA-ARS – Drought stress tolerance in Nebraska – $66,000

Amit Mitra – USDA-NRI – Functional map of tomato genome using direct repeat induced gene silencing – $340,852

Thomas Clemente – USDA-NRI – Unraveling the molecular and physiological components that contribute to iron deficiency chlorosis in soybean – $124,873

Subash Das – NIH – Role of matrix protein of VSV in regulation of viral RNA synthesis and assembly – $365,000

Mark Svoboda, Brian Wardlow, and Tsegaye Tadesse – USGS – Incorporating remote sensing information into the U.S. Drought Monitor – $152,608

Matthew Stockton – USDA-NRI – Whole-farm economic biological stochastic simulation model of small to medium cow-calf farms with research, teaching and extension modules – $499,740

Gary Hein, Paul Burgener, and Drew Lyon – Biologically intensive areawide IPM of the Russian Wheat Aphid and Greenbug: Nebraska – $91,000

Stephen Baenziger – USDA-NRI – Wheat applied genomics – $47,750

Milford Hanna – NSF – Multiscale transport in expanding biopolymers during extrusion – $138,065

Grants and Contracts Received for January and February 2007

Agricultural Research Division:	
John Yohe – U.S. Agency for International Development, M/CPO/CMP	$900,000.00
Agronomy and Horticulture:	
Stephen Baenziger – USDA-NRI	$47,750.00
George Graef – Monsanto	$33,250.00
Robert Shearman – Native Turf Group	$40,000.00
Miscellaneous Grants under $10,000	$32,850.00
Animal Science:	
Miscellaneous Grants under $10,000	$5,000.00
Biochemistry:	
Ruma Banerjee – NIH	$244,716.00
Weidong Zhu – American Heart Association	$41,000.00
Food Science and Technology:	
Richard Goodman – Private Industries (6)	$617,850.00
Stephen Taylor – USDA-CSREES	$145,103.00
Miscellaneous Grants under $10,000	$7,600.00
Northeast Research and Extension Center:	
Miscellaneous Grants under $10,000	$20,242.00
Panhandle Research and Extension Center:	
Miscellaneous Grants under $10,000	$40,000.00
Plant Pathology:	
Miscellaneous Grants under $10,000	$7,213.00
School of Natural Resources:	
Scott Hygnstrom – Nebraska Game and Parks	$40,000.00
Susan Lackey – Lower Platte North Natural Resources District	$216,000.00
Mark Pegg – Nebraska Game and Parks	$140,554.00
Larkin Powell – Nebraska Game and Parks	$69,020.00
Donald Rundquist – NOAA	$40,000.00
Mark Svoboda – USGS	$39,058.00
Richard Tyre – Nebraska Health and Human Services	$49,000.00
Miscellaneous Grants under $10,000	$12,500.00
Statistics:	
Kent Eskridge – Nebraska Health and Human Services	$10,500.00
Veterinary and Biomedical Sciences:	
Israrul Ansari – National Pork Board	$57,600.00
Gerald Duhamel – Morris Animal Foundation	$14,526.00
Fernando Osorio – National Pork Board	$148,400.00
David Smith – Bioniche Life Sciences	$345,714.89
West Central Research and Extension Center:	
Miscellaneous Grants under $10,000	$4,900.00
Total	**$3,370,346.89**